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AUTHOR Hannafin, Michael J.
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ABSTRACT

The consistency of verbal and/or visual learning strategy and the effects of such strategies on the recall of concrete and abstract prose by third and fourth grade students were investigated. Using a learning strategy screening procedure, students were classified as demonstrating high, medium, or low dominance of verbal or visual learning strategies. Students then saw and/or heard an 18-minute children's story, via audiotape, slide-tape, or a synchronized audio-slide-tape presentation. Upon completion of the presentation, a 24-item recall test--12 items measuring recall of abstract content and 12 measuring recall of concrete content--was administered. As predicted, the combined audiovisual presentation yielded superior recall of both concrete and abstract content. The picture-only presentation yielded greater recall of concrete content than the oral-only presentation, but no differences were found for abstract content. Contrary to expectations, neither strength of reported strategy nor the interaction between learning strategy and presentation modalities was significant. Six references are listed. (Author/LMM)

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An Analysis of the Consistency and Effects of Reported Learning Strategy Use by Third and Fourth Graders

Michael J. Hannafin

University of Colorado

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Abstract

The consistency of verbal and/or visual learning strategy, and effects of such strategies on the recall of concrete and abstract prose, were investigated. Using a learning strategy screening procedure, students were classified as demonstrating high, medium, or low dominance of verbal or visual learning strategies. Students then saw and/or heard an 18-minute children's story, via audiotape, slide-tape, or a synchronized audio-slide-tape presentation. Upon completion of the presentation, a 24-item recall test--12 items measuring recall of abstract content and 12 items measuring recall of concrete content--was administered. As predicted, the combined audiovisual presentation yielded superior recall of both concrete and abstract content. The picture-only presentation yielded greater recall of concrete content than the oral-only presentation, but no differences were found for abstract content. Contrary to expectations, neither strength of reported strategy nor the interaction between learning strategy and presentation modalities were significant. Implications for further research are discussed.

An Analysis of the Consistency and Effects

of Reported Learning Strategy Use by Third and Fourth Graders

Learning strategies, the spontaneous strategies used by learners to remember information, have received comparatively little systematic study. Although a significant number of learning strategy theories have been developed and published during the past decade (see, for example, Dunn & Dunn, 1978), little empirical research regarding such strategies has been reported.

Available research regarding cognitive schema (e.g., Johnson & Malgady, 1975; Ortony, Schallert, Reynolds, & Arter, 1978) suggests that learners possess a sort of anticipative cognitive set for processing information. Some researchers (e.g., Flavell, 1977) have described a process whereby learners modify or adjust their learning set based upon the requirements of specific learning tasks. It is unclear, however, precisely how static or malleable learner strategies are to varied instructional stimuli.

Recently, a group-administered learning strategy screening, designed to identify the visual or verbal strategies used by students, has been developed (Hannafin, 1981). Preliminary research has indicated that students can be reliably classified as visual or verbal learners (Hannafin, Note 1), and that use of such strategies is not correlated with general ability, i.e. no differences in ability were found for students reporting visual, verbal, or mixed visual-verbal learning strategies (Hannafin, Note 2). However, the effect of such strategies in moderating learning from visual versus verbal instructional presentations has not been demonstrated consistently. While some researchers

have found significant learning strategy mode-by-instructional mode interactions (e.g., Delaney, 1978, Richardson, 1978), other researchers have found no such effects (DeBoth & Dominowski, 1978; Newcomer & Goodman, 1975).

One methodological problem that has confounded the no-effect research may be the manner in which learning strategies have been operationally defined, i.e., rather than simply visual or verbal learners, where all students have been classified as either one type of learner or the other, perhaps effects are more likely to be associated with the degree to which visual or verbal strategies are used by learners. Other problems in the study of learning strategies may be associated with type of learning task and the level or complexity (cf. Paivio, 1971; Salomon & Clark, 1977) of information to be learned. The purpose of the present study was to examine the effects of high, medium, and low strength verbal and visual strategies on the recall of two levels of learning, concrete and abstract, from verbally and/or visually presented prose.

Method

Subjects

A total of 115 third-grade and 115 fourth-grade students, selected from a pool of 360 students, served as subjects. Students were selected from either of two schools located in a predominately middle-class suburban school district.

Materials

The materials used in the study included a group-administered learning strategy screening, three versions of a prose presentation, and a recall test covering information presented. An audiotape learning

strategy screening, consisting of directions for completing the screening, two practice words, and the presentation of five concrete nouns, was employed. The screening, which was used to determine the reported visual or verbal learning strategies used by students to remember the presented nouns, was approximately 10 minutes in duration and was presented and paced via audiotape. The nouns used during the learning strategy screening were boy, animal, book, plant, and tree. The concreteness of the five nouns was based upon the ratings provided by Paivio, Yuille, and Madigan (1968). The criteria used for word selection included: (a) high frequency (AA) based on the Thorndike-Lorge (Thorndike & Lorge, 1944) frequency index, (b) high concreteness ratings, and (c) high imagery rating.

Students recorded individually their response to the learning strategy screening on a student strategy sheet. The strategy sheet provided space for writing the word presented and for selecting which of seven strategy options the student used to remember the word. The options, which were identified as generic responses by Hannafin and Carey (Note 3) and Filan (1981), included three visual and three verbal response options. The positions of the verbal and visual options were systematically rotated to minimize possible response set tendencies. In addition, one open-ended option for "other" strategy was available for each item. The "other" strategy response, when used, was subsequently classified by the researcher as either a visual or verbal strategy.

The three presentations, each depicting an adapted children's text, The Wump World (Peet, 1970), included an ORAL, PICTURE, and ORAL + PICTURE story version. Each of the story versions included both concrete and abstract criterion information. The Wump World is a high interest,

animated story with a Spache graded readability estimate of 4.8. The story was slightly adapted to include both concrete and abstract information. The three presentations included: ORAL, an audiotape verbal presentation of the story; PICS, a 35-mm slide presentation of the text pictures used to depict the story; the ORAL + PICS, a combination of the audiotape and 35-mm slides. Each of the presentation versions was 18 minutes in duration and paced identically to control student time on task.

The criterion test measure was a 24-item short-answer test, consisting of 12 items measuring recall of abstract information presented in the story and 12 items measuring recall of concrete information. Test items were selected from a 28-item test which was originally developed for previous prose learning studies (Carey & Hannafin, Note 4; Hannafin & Carey, Note 3). The concreteness-abstractness of the test information, where possible, was based on the ratings provided by Paivio et al. (1968). Test-retest reliability coefficients, which were obtained previously on the original 28-item test, were .84 for the abstract scale, .85 for the concrete scale, and .90 for the full-length scale. Reliability coefficients for the 24-item test used in the present study were .76 for the 12-item abstract scale, .85 for the 12-item concrete scale, and .87 for the full-length criterion test.

Procedures

Students were administered the learning strategy screening in their home classrooms. During the screening, students were directed to remember the presented word. Students were then told to write the presented word on their student strategy sheets and to select the response option that

best described how the word was remembered. The experimenters circulated throughout the room to assist students, when needed, in completing the tasks.

Upon completion of the learning strategy screening, students were classified into learning strategy groups according to the strategies they reported using during the screening. Student responses were tabulated in the following manner. Each verbal option selected was assigned a weight of -1, and each visual option selected was assigned a weight of +1. Student responses were summed for the five screening items, with possible scores ranging from -5 through +5.

Since some student responses to the "other" options were not readily classifiable, a small number of even-numbered scores were obtained for the statistical analysis students with even-numbered screening scores were eliminated from the study. Classifications for personal learning strategies were as follows: HI-VERB (-5), MED-VERB (-3), LO-VERB (-1), LO-VIS (+1), MED-VIS (+3), HI-VIS (+5).

Exactly one week after completing the screening portion of the study, students went to pre-assigned rooms in accordance with their treatment group assignments. Students then heard and/or viewed The Wump World in accordance with presentation group assignment. Following the presentation, there was a brief interpolated activity during which the students stood and stretched at their assigned seats while test answer sheets were distributed to them. The criterion test was then administered.

Results and Discussion

The mean recall test scores are summarized in Table 1. Corresponding ANOVA source data are contained in Table 2. As shown, significant

Table 1

Mean Recall Scores for
Concrete and Abstract Prose Content

Presentation	Level of Learning	Reported Learning Strategies: HI-VERB	MED-VERB	LO-VERB	LO-VIS	MED-VIS	HI-VIS	Totals
ORAL	Concrete	2.80	3.57	2.13	3.00	3.27	2.27	2.74
	Abstract	3.27	2.71	3.27	2.80	4.09	2.40	3.08
PICS	Concrete	4.92	5.10	3.46	3.47	5.78	5.92	4.67
	Abstract	3.54	4.60	3.23	2.53	3.78	5.00	3.71
ORAL + PICS	Concrete	5.85	5.75	6.30	7.50	6.19	6.82	6.44
	Abstract	5.15	4.92	5.90	5.69	3.75	6.00	5.15
Totals	Concrete	4.44	5.00	3.68	4.72	5.19	4.77	4.62
	Abstract	3.95	4.28	3.95	3.72	3.86	4.28	3.99

Table 2

ANOVA Source Data for Concrete and Abstract Recall

Source	df	Ms	F	p<
Concrete				
Presentation	2	249.51	40.46	.0001
Learning Strategy	5	4.88	.79	ns
Presentation and Learning Strategy	10	9.54	1.55	ns
Error	222	6.17		
Abstract				
Presentation	2	89.98	18.59	.0001
Learning Strategy	5	3.10	.64	ns
Presentation and Learning Strategy	10	9.79	2.02	ns
Error	222	4.84		

differences were found for presentation modality. As expected, the ORAL + PICS presentation yielded significantly greater recall of both abstract content and concrete content than either the ORAL or PICS presentations. For concrete content, the PICS presentation resulted in greater recall than the ORAL presentation. For abstract content, however, no such differences were found.

No differences for either the strength or type of personal learning strategy were found. In addition, no presentation-by-learning strategy interactions were found. These findings provide support for researchers who have concluded that learning strategies are not powerful variables in moderating learning, neither by themselves nor in combination with instructional modality.

General Discussion

The findings regarding the superiority of verbal-visual presentations in the learning of both concrete and abstract prose content, and the superiority of pictures over oral-aural instruction in the learning of concrete content, provides support for previous findings (Hannafin, 1981; Carey & Hannafin, Note 4).

Of particular interest, however, was the effect of strength of learning strategy and type of learning strategy on the learning of content presented in the same or different modalities. Based on previous research, it was suspected the high verbal students would perform best in the verbally dominated presentation, and that high visual students would perform best in the pictured dominated presentation. However, no differences--main effects or interactions--associated with either type or strength of learning strategy were found. This finding is consistent

with researchers who have concluded that learning strategies have little moderating effect on learning from similar, or dissimilar, instructional modality.

A number of questions, however, persist. For example, learning strategies as defined in the present study and in most related studies, are typically treated as traits. It is possible that such traits are highly latent and not automatically or systematically applied to novel learning tasks unless activated either by internal mechanisms or by external prompting. It is also likely that learning strategies vary from one type of task to another (cf. Flavell, 1977). For example, strategies for recalling isolated abstract words may be quite different from strategies for recalling abstract prose. In the present study, individual learning strategies were classified based upon isolated word recall while the actual remembering task was contextual prose. Perhaps procedures can be developed to classify individual learning strategies based upon type and level of criterion learning task. If individual learning strategies are important learning variables, such screening methods would be more likely to obviate such effects. Further research as to the stability of reported learning strategies across different learning tasks and the effects of task-specific learning strategies on criterion learning could be useful in answering these questions.

Reference Notes

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